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(54) **METHOD OF IMAGE GUIDED INTRAOPERATIVE SIMULTANEOUS SEVERAL PORTS MICROBEAM RADIATION THERAPY WITH MICROFOCUS X-RAY TUBES**

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(57) **ABSTRACT**

This invention pertains to a method of low-cost intraoperative all field simultaneous parallel microbeam single fraction few seconds duration 100 to 1,000 Gy and higher dose radiosurgery with micro-electro-mechanical systems (MEMS)-carbon nanotube based microaccelerators. It ablates cancer cells including the mesenchymal epithelial transformation associated cancer stem cells. Microbeam brachy-therapeutic radiosurgery is performed. Microaccelerators are configured for simultaneous parallel microbeam emission from varying angels to an isocentric tumor. Their additive dose rate at the isocentric tumor is in the range of 10,000 to 20,000 Gy/s. It eliminates most tumor recurrence and metastasis which enhances cancer cure rates. It also exposes cancer antigens which induces cancer immunity. Stereotactic breast core biopsy is combined with, positron emission tomography and computerized tomography and phase-contrast imaging. Parallel microbeam brachytherapy preserves normal breast appearance. Migration of normal stem cells from unirradiated valley regions heals the radiation damage to the normal tissue.

3 Claims, 36 Drawing Sheets